Ryan Chouest daily data transmission and report

Period covered: 1000 hrs 07/07/2010-1000 hrs 07/08/2010

103.515 – Cumulative nautical miles covered

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Objective:

The primary objective of this transect is to map the distribution of dissolved poly aromatic hydrocarbons in the vicinity of the MC252 well site.

Cruise notes:

Science crew decided to revise Cruise 6 route while honouring the 10 mile radius limit from the MC 252 site, instructed by Simon Lisiecki. This update to the previously existing track is a curved track (Figure 1), not less than 10 miles from MC 252. Four vertical casts were conducted in the vicinity of the well site at 1200 hrs (28°36.454'N, 88°01.010'W), 1654 hrs (28°38.174'N, 88°26.436'W), 2151 hrs (28°53.804'N, 88°23.755'W). The last vertical cast occurred on 07/08, at 0800 hrs (28°53.384'N, 88°07.224'W) after which the *Ryan Chouest* travelled along the last cruise segment, trending NE towards the port at Theodore, Alabama (Figure 1).

Science results and preliminary interpretation:

Fluorometry results

Dissolved poly aromatic hydrocarbon levels from the Chelsea sensor are relatively low with the exception of medium levels that proximal to brown oil surface observations in Figure 2. Increased levels of sensor responses, from the Trios and Contros sensors, largely intersect the ERMA plot of oiling extent (Figures 3 and 4). Like the Chelsea sensor, the Trios and Contros flourometry information show sharply enhanced responses (mid-high in this case) where brown oil was observed. A similar deduction, with elevated concentration levels but less when compared to brown oil can be made for the area with

mousse was seen on water surface with an isolated buffer of minimal concentration around seaweed presence.

Four vertical casts were performed at locations about 10 nautical miles to the south east (A), south west (B), north west (C), north east (D) of the MC 252 well site.

Figure 5A to Figure 5D show the calibrated sensor responses during the vertical casts conducted at four different locations. The following is a brief description of the features of the four vertical profile graphs.

Site A at N 28 36.454, W 088 01.010, south east of the well site: All sensor readings along the water column show close to baseline level of poly aromatic hydrocarbon concentrations.

Site B at N 28 38.174, W 088 26.436, south west of the well site: All sensor readings along the water column show near background level of poly aromatic hydrocarbon concentrations.

Site C at N 28 53.804, W 088 23.755, north west of the well site: Elevated concentration of poly aromatic hydrocarbons were detected starting from around 25 meters, below which all sensor show baseline readings. The vertical distribution of PAH in the water column down to 25 m may indicate the formation of plumes of hydrocarbons in water.

Site D at N 28 53.384, W 088 07.224, north east of the well site: Slightly elevated concentrations of PAH extended to 30m below the sea surface which may suggest the formation of plumes of hydrocarbons in water.

The GCMS analysis of the collected water samples is still ongoing and the results will be presented in the cruise summary.

Surface Observations

Clear waters and occasional seaweed throughout distance covered till crew members spotted narrow bands of sheen at 2006 hrs (28°46.648'N, 88°27.555'W and then brown oil (Photo 1) at 2040 hrs (28°48.974'N, 88°26.816'W) although visibility was quite poor to take pictures. Additionally, the C&C crew observed groups of dolphins at 0549 hrs (28°46.913'N, 88°50.278'W) and at 0817 hrs (28°53.386'N, 88°50.278'W).

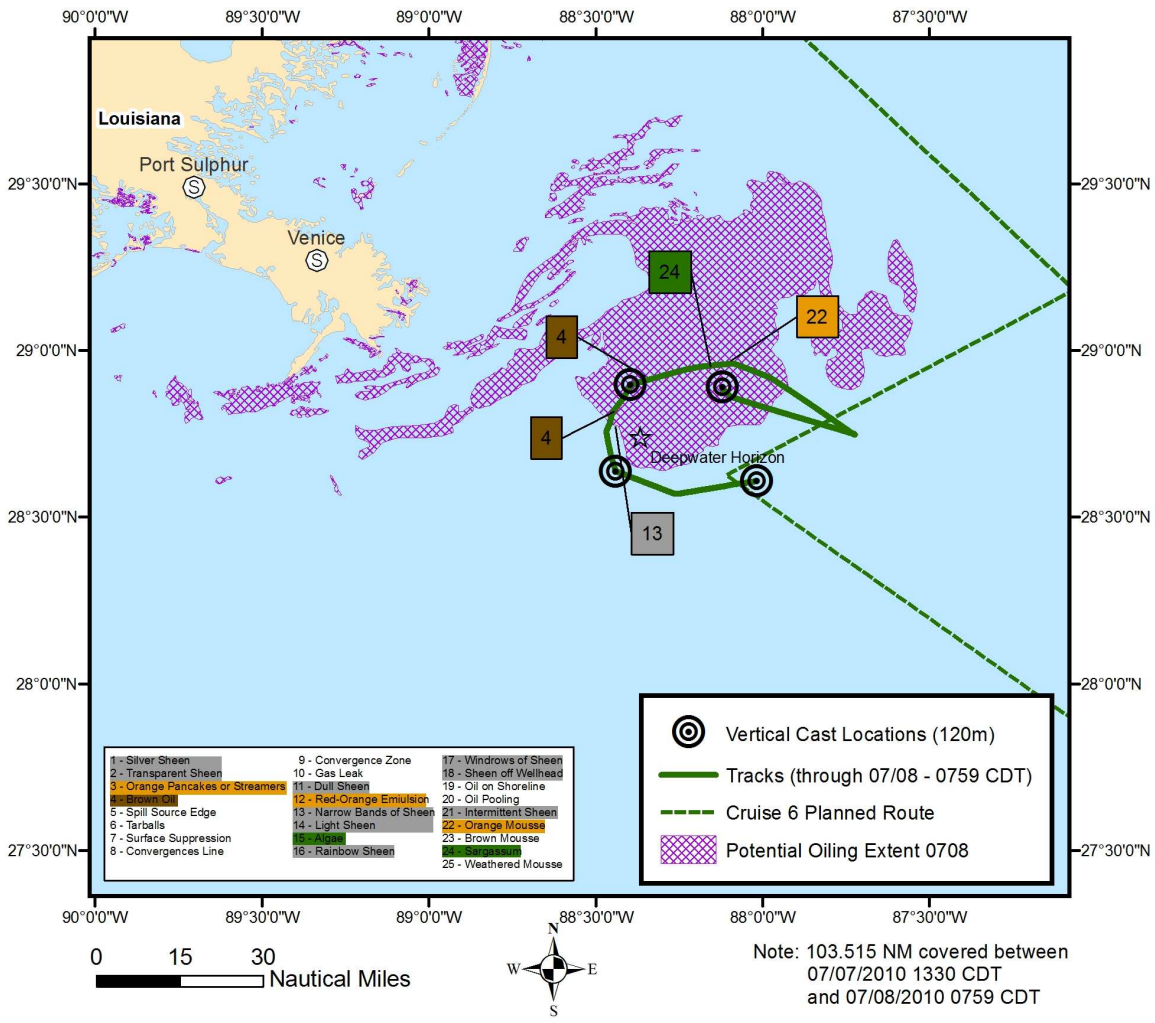

Figure 1. Planned course plotted for Cruise 6. Purple shaded area represents outline extent of the slick from 07/08 ERMA composite.

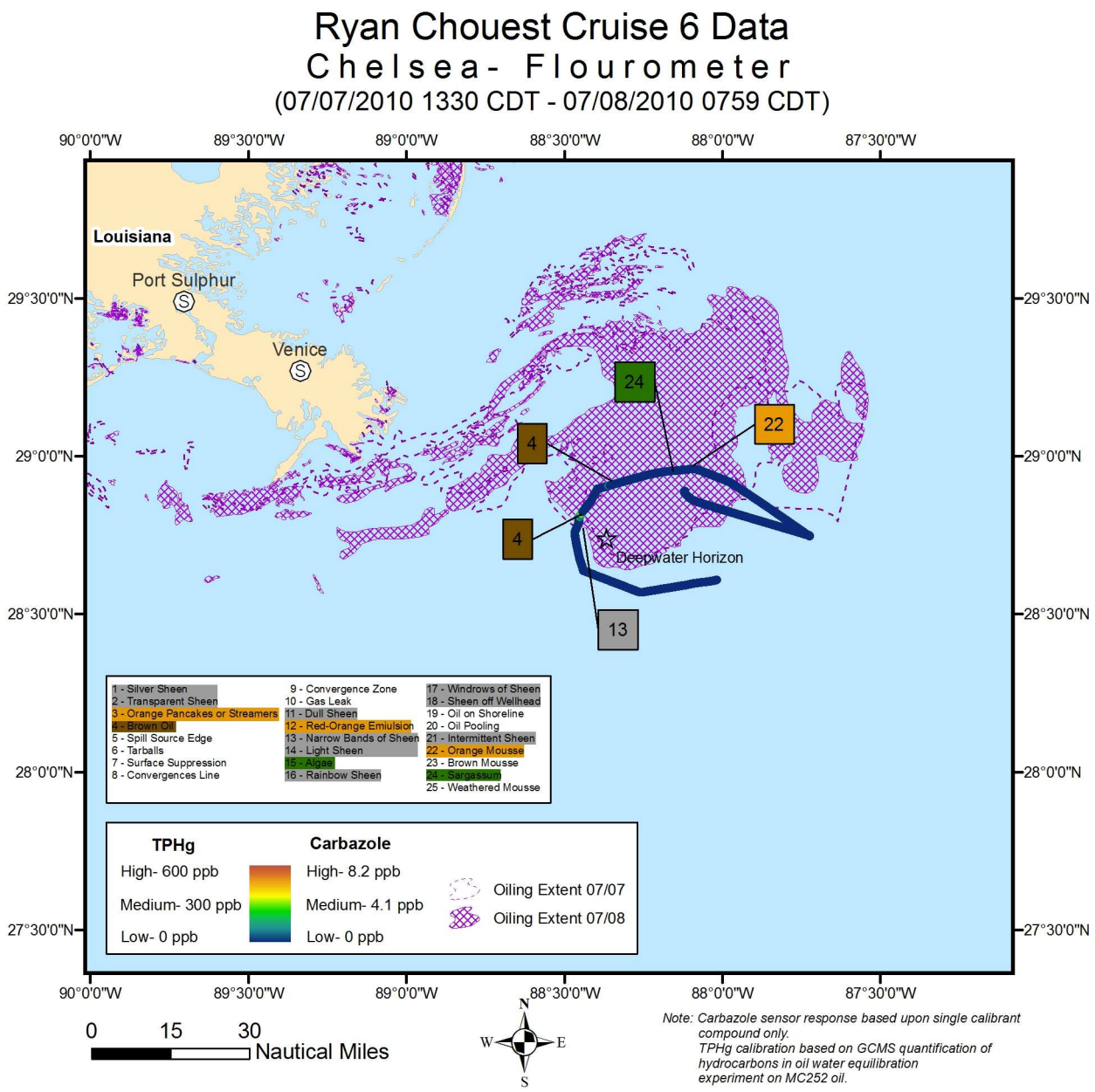

Figure 2. Chelsea fluorometer results plotted with location on cruise 6 track.

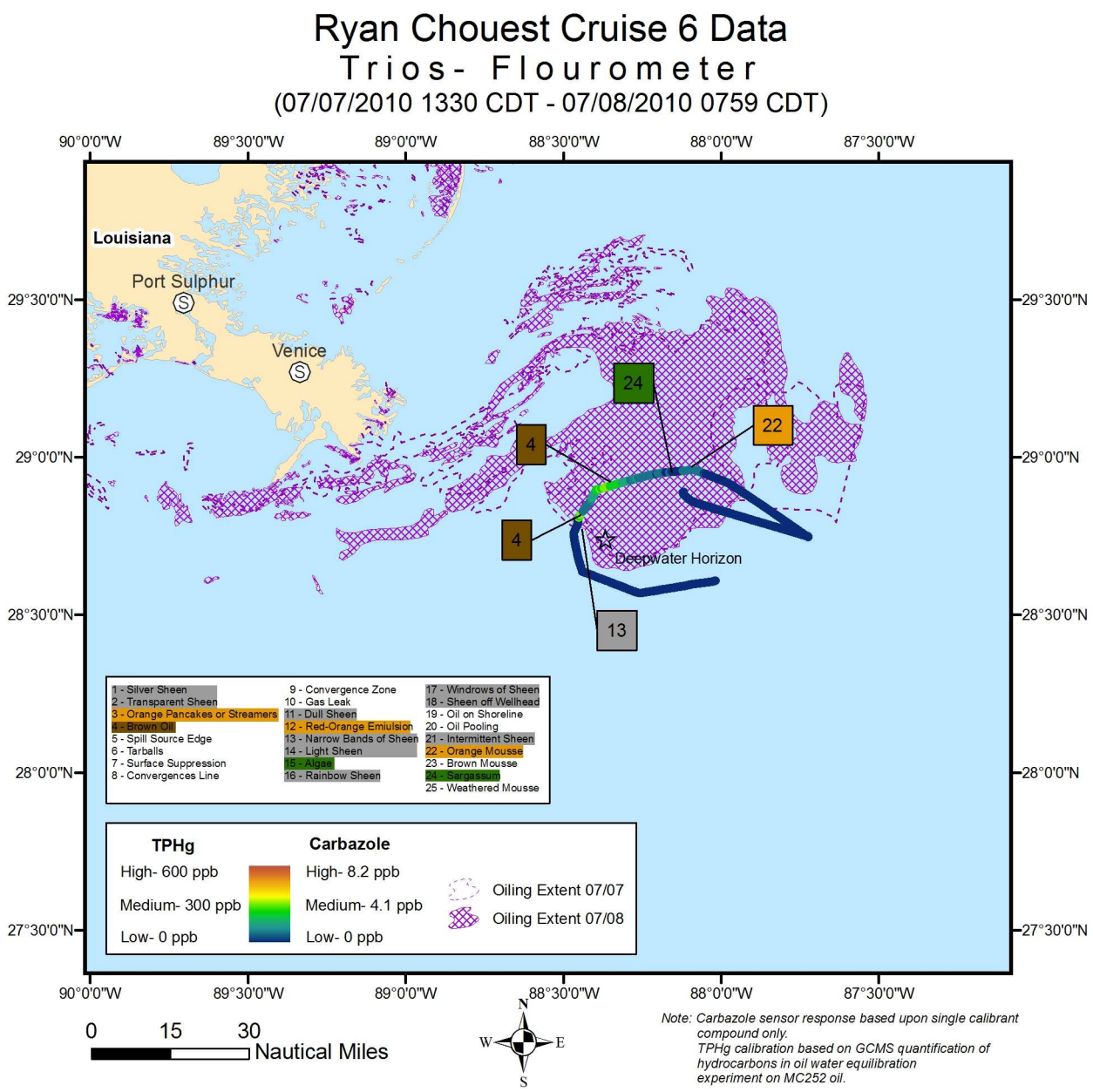

Figure 3. Trios fluorometer results plotted with location on cruise 6 track.

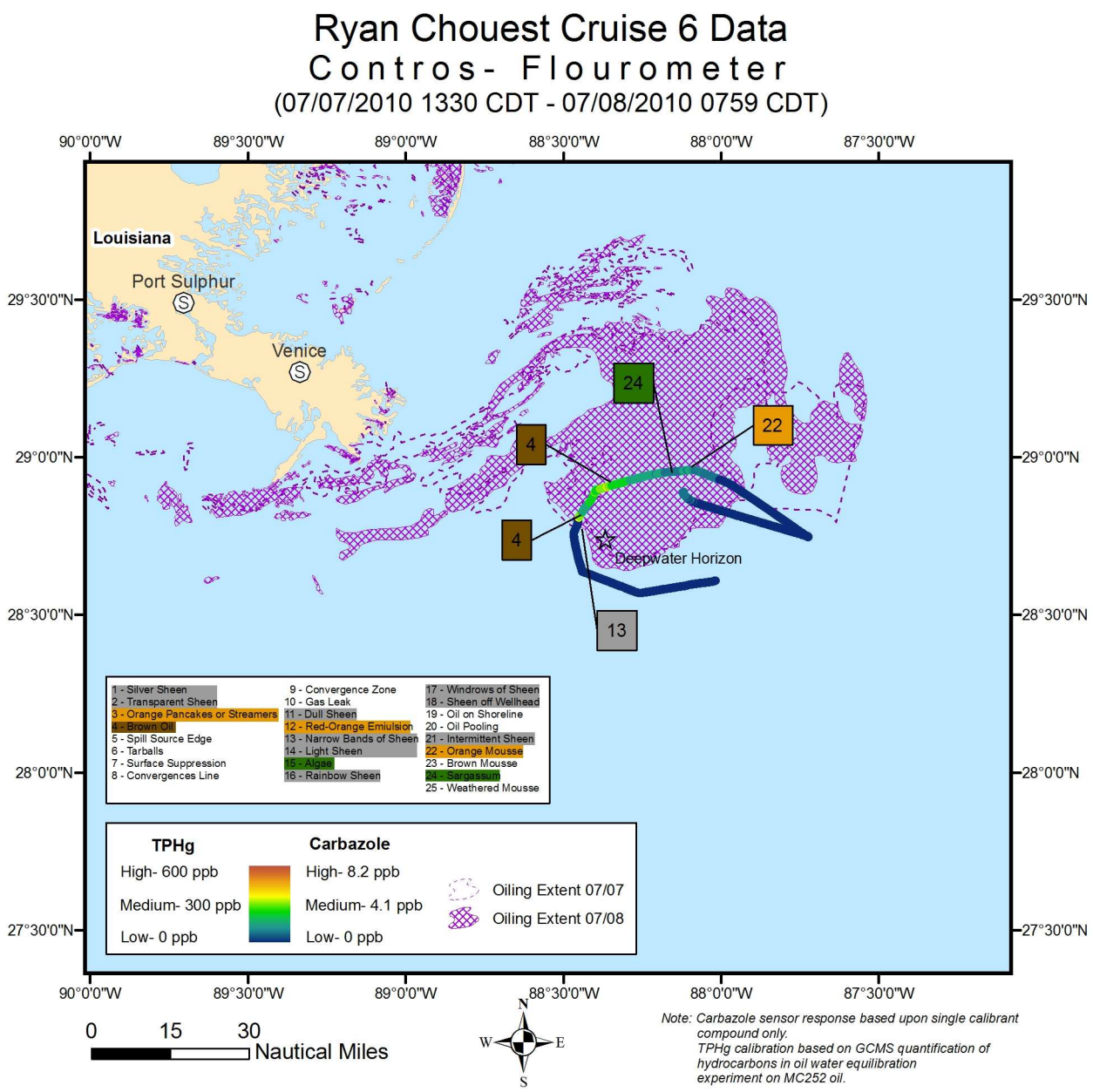

Figure 4. Contros fluorometer results plotted with location on cruise 6 track.

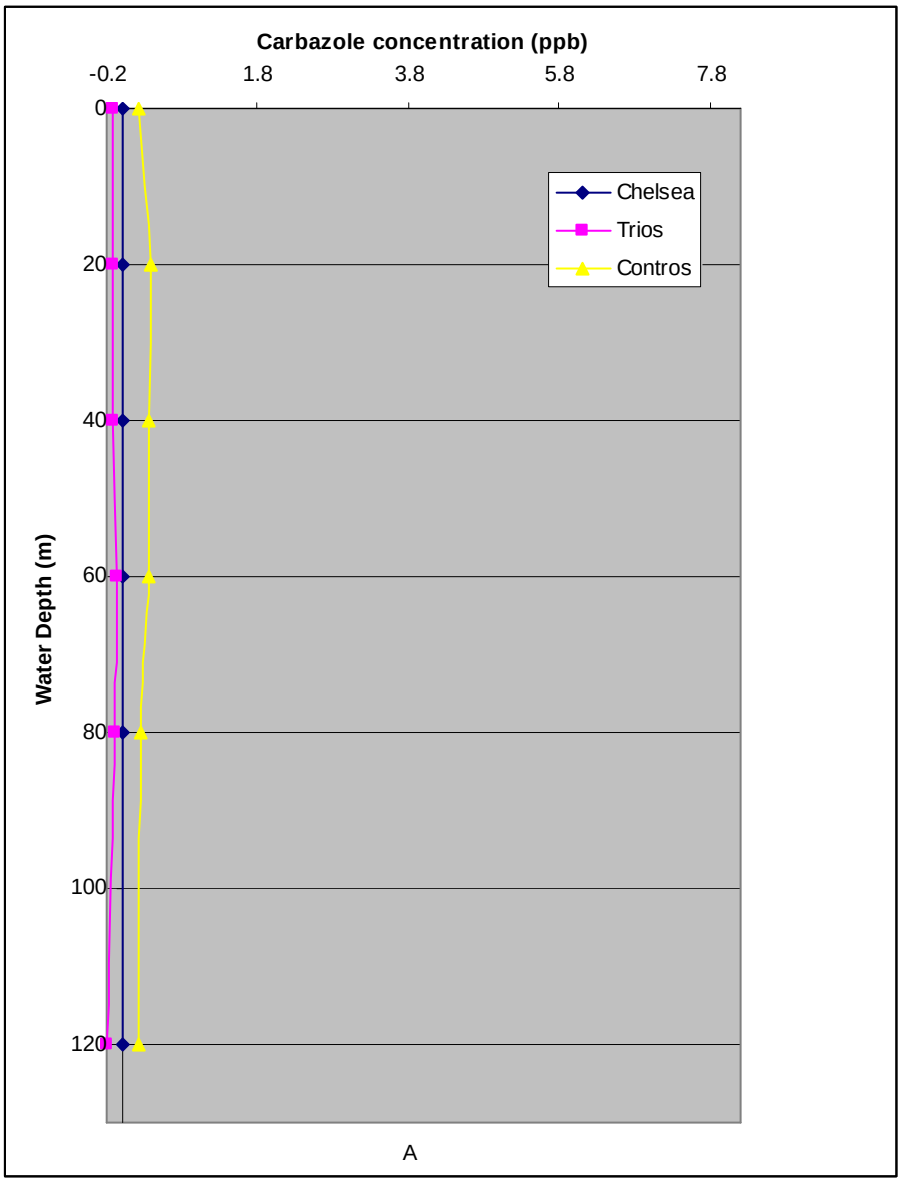

Figure 5A. Fluorometer response vs. water depth, vertical profile at N 28 36.454, W 088 01.010, south east of the well site

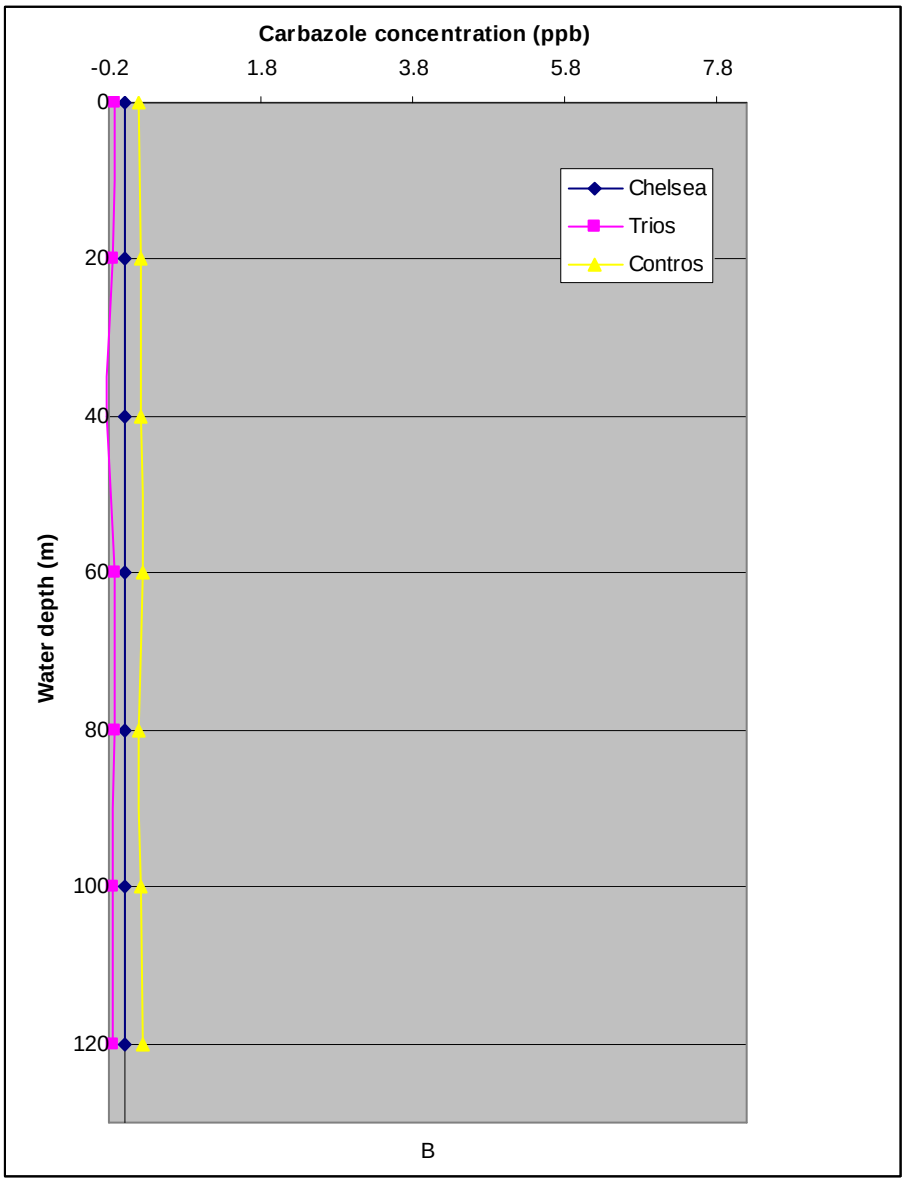

Figure 5B. Fluorometer response vs. water depth, vertical profile at N 28 38.174, W 088 26.436, south west of the well site

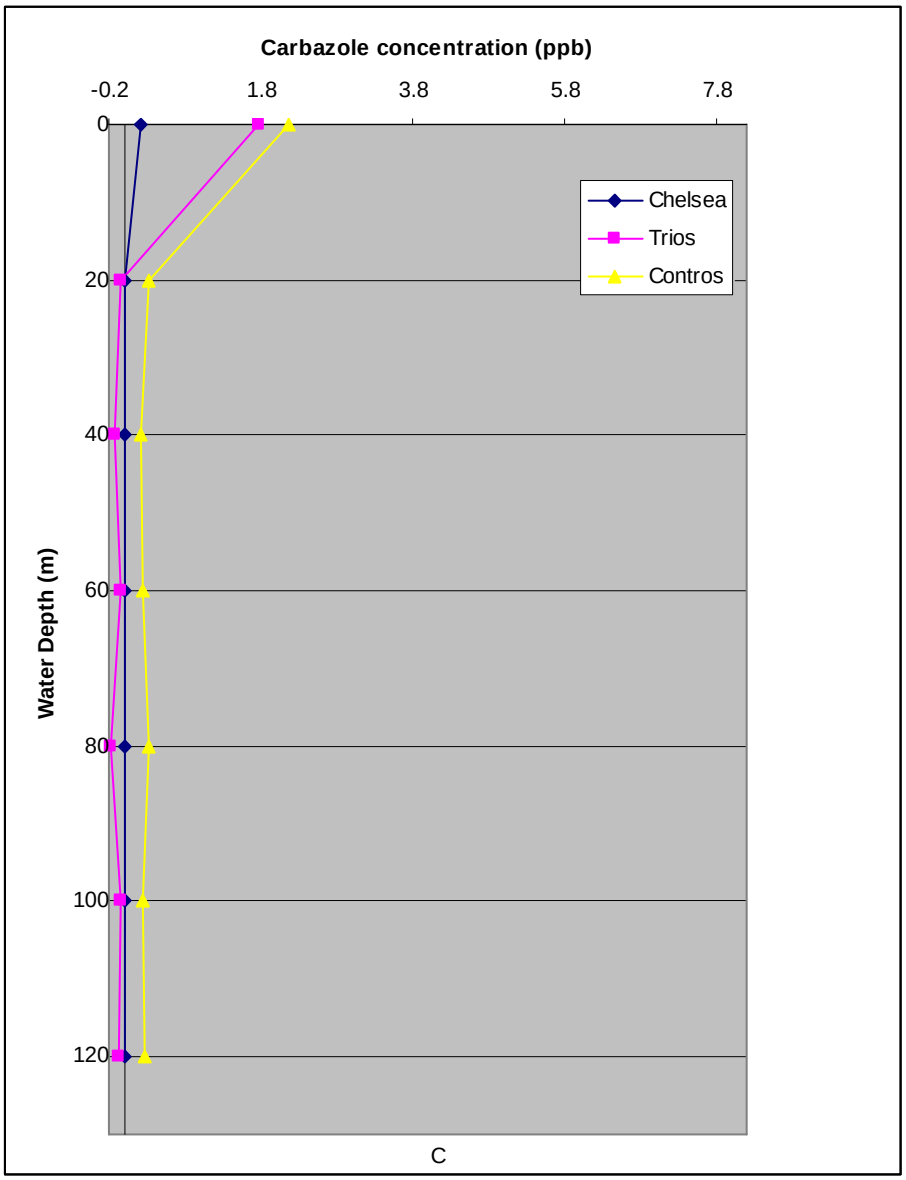

Figure 5C. Fluorometer response vs. water depth, vertical profile at N 28 53.804, W 088 23.755, north west of the well site

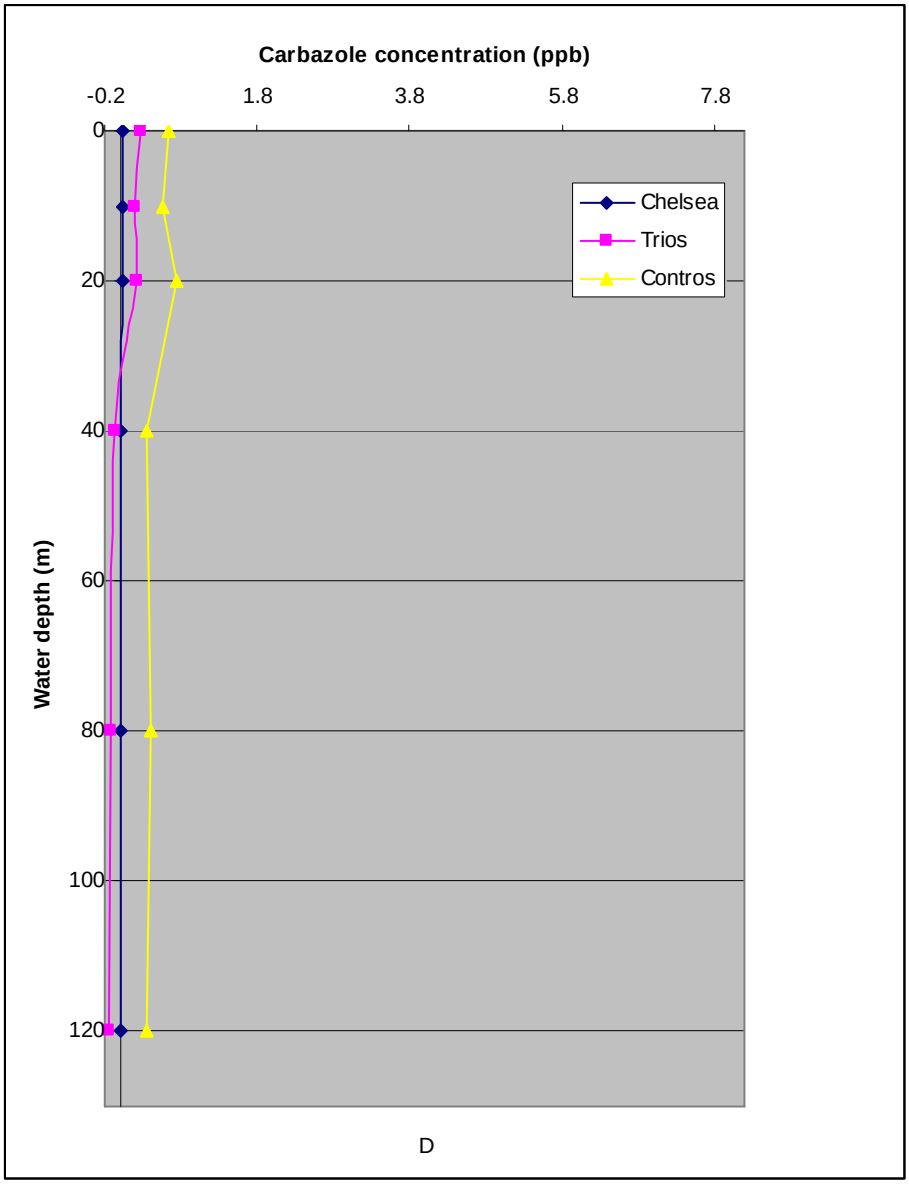

Figure 5D. Fluorometer response vs. water depth, vertical profile at N 28 53.384, W 088 07.224, north east of the well site

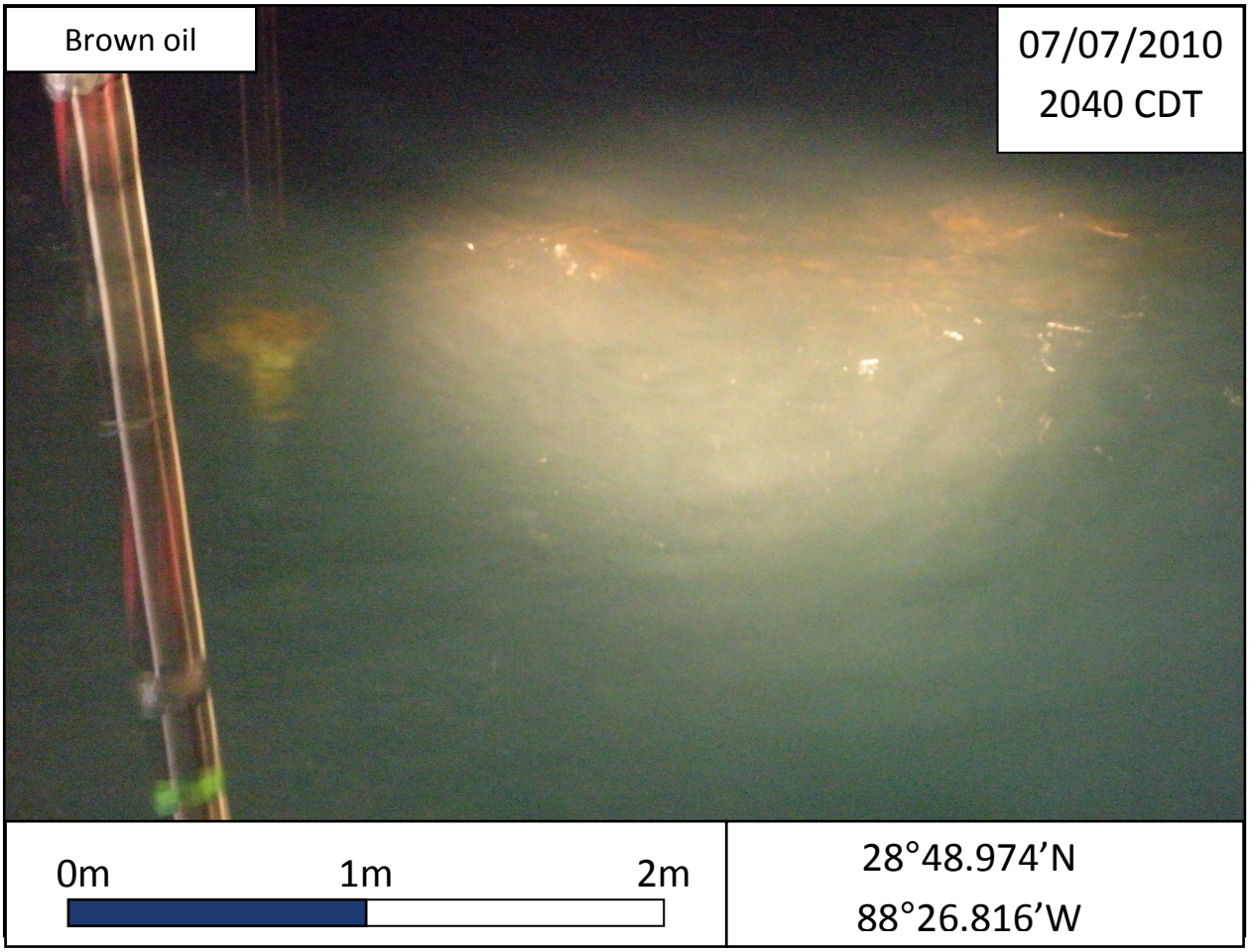

Photo 1. Brown oil observed on water surface approximately 10 miles off MC 252.

Problems/operational issues:

At 1650 hrs, a CSIRO crew member suffered a knock on the shin while assisting in deploying the vertical case coincided with a sway of the *Ryan Chouest* from a large swell.

Planned activities for next 24 hours:

Stay on course with the revised Cruise 6 route. Anticipate arrival at a possible vertical cast deployment towards entry to the port at Theodore. This action is in cognisance with Dr. Szedlmayer's study of artificial reefs and Red Snapper distribution.